THE SENATE
TWENTY-EIGHTH LEGISLATURE, 2015
STATE OF HAWAII

S.R. NO. 55

MAR 13 2015

SENATE RESOLUTION

RECOGNIZING THE HISTORIC, CULTURAL, AND SCIENTIFIC VALUE OF THE KARST AQUIFER ECOSYSTEM OF PEARL HARBOR AND THE EWA PLAIN.

WHEREAS, the Ewa Plain is part of the greater ahupuaa of Honouliuli in the Moku of Ewa and consists of approximately fifty square miles located on the southwest corner of the Island of Oahu; and

WHEREAS, much of Pearl Harbor was also historically part of the Moku of Ewa in ancient Hawaiian times and before the Great Mahele; and

WHEREAS, according to the Hawaiian creation chant, the Kumulipo, the coral polyp, was the first creature to emerge from the sea during creation, and early Hawaiians recognized that coral reefs were an essential building block of their subsistence, culture, and island survival; and

WHEREAS, the international community uses the European name "karst" to refer to topography that is a geological formation of carbonate limestone rock, and approximately twenty percent of the United States is underlain by various types of recognized and documented porous permeable coralline limestone karst aquifers; and

WHEREAS, the Ewa Plain and Pearl Harbor consist of karst, characterized by porous, permeable coralline limestone reef deposit formed over one hundred thousand years ago during at least two high stands of sea level, and which tapers back from a depth of approximately one thousand feet at the Ewa shoreline to points inland where it attaches to the ancient lava flows of the Waianae mountains; and

WHEREAS, water scientists have determined that the Ewa Plain limestone karst, or caprock, acquired its permeable subsurface caves, channels, and waterways as a result of thousands of years of acidic rainwater flows and streams dissolving the coralline limestone; and

WHEREAS, hydrology studies have determined that the Ewa Plain karst water system is very permeable and transmissive, allowing monitoring of tidal fluctuations miles inland, and is part of what is known as the Ghyben-Herzberg water lens containing valuable island water reserves; and

WHEREAS, the Ewa Plan karst has hydrologically connected below surface waterways and a natural caprock aquifer filtering system that preserves the freshwater lens while transferring nutrients and organic materials to downstream food webs by the shoreline; and

WHEREAS, through the centuries, Hawaiians used the Ewa Plain water-fed karst sinkholes as agricultural sites for crops such as kalo, bananas, sweet potatoes, and sugar cane, and while in an otherwise arid climate appearance, the underground waterways supported groves of culturally important native Hawaiian trees and native plants; and

WHEREAS, ancient Hawaiians used these thousands of karst freshwater springs on the Ewa Plain and the Pearl Harbor ecosystem to aerate bountiful fishponds and provide lush agricultural kalo fields; and

WHEREAS, there exists a complex Ewa Plain and Pearl Harbor karst aquifer system of springs, subterranean water channels, caves, and connected cavern systems allowing underground water streams to emerge and disappear as the water travels toward the sea, creating habitats for native Hawaiian shrimp, spawning marine life, and nurturing limu; and

WHEREAS, points of deep caprock fracturing by construction can contaminate, overwhelm, and flood the natural karst filters, causing polluted waters to flow into the aquifer water systems, shoreline habitat areas, and sea coast reefs, damaging marine ecosystems, aquatic populations, and coastal fisheries; and

WHEREAS, subterranean karst caves, water channels, and springs may also create hazardous construction conditions because they may exist just a few dozen feet below the ground

surface, and may be opened up during caprock fracturing construction activities, exposing water caves and sinkholes and releasing significant amounts of subsurface groundwater; and

WHEREAS, Ewa Plain subterranean caverns have been found during construction which contained stalactites and stalagmites made of a milky-white sparkling mineral called calcite as well as containing very important ancient animal bones and flora and fauna data of very significant scientific value; and

WHEREAS, karst is recognized and studied worldwide by universities, institutes, and organizations but not in Hawaii, where there is an opportunity to initiate studies of Hawaiian cultural karst histories, obtain scientific research grants, foster ecotourism, and encourage community educational endeavors related to geological and hydrological karst system facts important to Oahu's island sustainability; and

WHEREAS, federal agencies such as the United States Fish and Wildlife Service have funded example projects to restore Ewa Plain karst sinkholes and demonstrated that native Hawaiian opae ula freshwater shrimp, which have been used in National Aeronautics and Space Administration space research projects, can flourish in these karst cave sinkhole habitats, providing working environments for education, training, and new scientific discoveries; now, therefore,

BE IT RESOLVED by the Senate of the Twenty-eighth Legislature of the State of Hawaii, Regular Session of 2015, that the Ewa Plain and Pearl Harbor karst be recognized as an important aquifer water system, cultural and historic studies site, and ecological and hydrological research environment that could reveal important new water resource management information about the Ewa Plain and Pearl Harbor karst; and

BE IT FURTHER RESOLVED that certified copies of this Resolution be transmitted to the Governor, Chairperson of the Board of Land and Natural Resources, Chairperson of the Hawaiian Homes Commission, Chairperson of the Board of Trustees of the Office of Hawaiian Affairs, Mayor of the City and County of

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Honolulu, Manager and Chief Engineer of the Honolulu Board of Water Supply, and Commander of Navy Region Hawaii.

OFFERED BY: _____

By Request